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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/489,514	01/21/00	NARAYANAN	S 06618-406001

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IM52/0620

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EXAMINER

MERCADO, J

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 06/20/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/489,514	Applicant(s) NARAYANAN ET AL.	
	Examiner Mercado A Julian	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 7-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- | | |
|---|--|
| 15) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 18) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 16) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 19) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 17) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5</u> . | 20) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

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Remarks

1. The pending claims were submitted numbered from 1-7 for a first set of claims, followed by a second set of claims numbered from 6-18. The numbering of the claims out of sequence appears to be an inadvertent typographical error. The second set of claims have thus been renumbered as claims 8-20, and are addressed in this Office Action accordingly.

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Election/Restriction

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
- I. Claims 1-6, drawn to the product, classified in class 429, subclass 40.
 - II. Claims 7-20, drawn to the method of making, classified in class 427, subclass 115.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as product made and process of making. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made by a materially different process such as one employing a different mixing temperature.

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Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Scott Harris on June 15, 2001, a provisional election was made with traverse to prosecute the invention of Group II, claims 7-20.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-6 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

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Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 8-12, 14-16 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "the microparticles" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claims 8-10 are dependent on claim 5, which is presently drawn to a non-elected and withdrawn invention. It appears to the examiner that the claims should be dependent on claim 7.

Claim 11 is dependent on claim 1, and for similar reasons discussed above for claims 8-10, is rejected under the same grounds.

✓ Claim 14 recites the limitation "the substrate" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 15 recites the limitation "the surface of the membrane" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claims 16 and 19 each recites a similar limitation to claim 15 above and is rejected under the same grounds.

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being dependent upon a rejected base claim.

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Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 7, 9-11, 13, 14, 18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Serpico *et al* (U.S. Pat. 5,677,074).

Serpico teaches a process for making a catalyst ink for a fuel cell comprising mixing at room temperature water and particles of a fluorocarbon polymer with a particle size of about 1 to about 4 microns. (Col. 2 line 42-43, Col. 6 line 25 *et seq*) The catalytic material comprises Pt, *inter alia*. (Col. 4 line 19) The fluoropolymers comprise polytetrafluoroethylene, *inter alia*. (Col. 4 line 48) The catalyst ink also includes an ionomer. (Col. 3 line 58 *et seq*) The catalyst ink, once applied to a membrane, is bonded to an electrode. (Col. 6 line 50 *et seq*)

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Claim Rejections - 35 USC § 103

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Serpico *et al* as applied to claims 7, 9, 13, 14, 18, and 20 above.

The teachings of Serpico are discussed above.

Serpico does not explicitly teach the microparticles, i.e. particles of fluorocarbon polymer to have a surface area of about 5 to about 10 m²/g. However, at the time the invention was made

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it would have been obvious to the skilled artisan to employ the instant surface area for reasons such as enhanced electrochemical activity.

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8. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Serpico *et al* as applied to claims 7-9, 13, 14, 18, and 20 above, in view of Kindler (U.S. Pat. 5,992,008).

The teachings of Serpico are discussed above.

Serpico does not explicitly teach a second ionomer comprising a liquid copolymer of tetrafluoroethylene and perfluorovinylethersulfonic acid. However, Kindler teaches such a liquid copolymer. (Col. 3 lines 36-38, col. 6 line 28 *et seq*) Thus, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ a liquid copolymer of tetrafluoroethylene and perfluorovinylethersulfonic acid for reasons such as enhancing ionic conduction within the electrode.

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9. Claims 15-17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Serpico *et al* as applied to claims 7-9, 13, 14, 18, and 20 above, in view of Samuels *et al* (U.S. Pat. 4,524,114).

Serpico does not explicitly teach roughening the surface of the membrane prior to applying the catalyst ink. However, Samuels teaches roughening the surface of the membrane using silicon carbide prior to catalyst deposition. Thus, at the time the invention was made, it would have been obvious to the skilled artisan to employ roughening of the membrane for

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reasons such as increasing its surface area, thereby enhancing surface sites for catalyst ink adhesion.

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Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian A. Mercado whose telephone number is (703) 305-0511.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gabrielle Brouillette, can be reached at (703) 308-0756. The official fax phone number for the organization where this application or proceeding is assigned is (703) 305-3599. The unofficial fax number is (703) 306-3429.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

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am/June 17, 2001



STEPHEN KALAFUT
PRIMARY EXAMINER
GROUP 1700